CHICAGO RIVER BASCULE BRIDGE,
WABASH AVENUE
I&M Canal National Heritage Corridor
North Wabash Avenue crossing
the Chicago River
Chicago
Cook County
Illinois

HAER No. IL-48

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
P.O. Box 37127
Washington, D.C. 20013-7127

HISTORIC AMERICAN ENGINEERING RECORD

CHICAGO RIVER BASCULE BRIDGE, WABASH AVENUE
I&M Canal National Heritage Corridor

HAER No. IL-48

Location:	I & M Canal National Heritage Corridor North Wabash Avenue crossing the Chicago River Chicago, Cook County, Illinois UTM: 16 E.447980 N.4637300 Quad: Chicago Loop
Date of Construction:	1930
Designer:	Thomas Pihlfeldt
Builder:	Ketler and Elliot Company
Present Owner:	City of Chicago
Present Use:	Vehicular Bridge
Significance:	In 1930 the Wabash Bridge was awarded the American Institute of Steel Construction prize for "Most Beautiful."
Project Information:	The Illinois and Michigan Canal was designated a National Heritage Corridor in 1984. The following year HABS/HAER embarked on an extensive inventory and documentation project of the 100 mile-long corridor. Field work for this project was concluded in 1988. Final editing of the documentation was completed in 1992.
Historians:	Charles Scott, Frances Alexander, and John Nicolay, 1986; Carolyn Brucken, 1992.

The trunnion bascule bridge was developed in Chicago to accommodate the heavy demands of both land and water traffic. The practicality of the trunnion bascule, with its minimal moving parts, was combined with aesthetic embellishments. The Wabash bridge was erected by the Ketler and Elliot Company, at a cost of over one million dollars, with design and construction supervised by Thomas Pihlfeldt, Engineer of Bridges. In 1930 the American Institute of Steel Construction awarded this bridge its annual prize for the "most beautiful" bridge in the United States or Canada costing more than one million dollars.

The Wabash Bridge is a single-deck, double-leaf trunnion bascule bridge. The bridge has a clear span of 232'-0" and measures 269'-0" between trunnions. The superstructure is steel construction; the deck truss is riveted, gusset-plate connections. Width measures 90'-0". There is a bridge tender's house on each side of lift span. These houses are identically designed. The buildings have lightly scored, concrete veneer with chamfered corners and ornamental pilasters, one-over-one-light, double-hung, sash windows, and a stylized "Moorish" dome.

SOURCES:

"Wabash Ave. Bascule and Viaduct, Chicago," Engineering News-Record, v. 105 (September 4, 1930): 393.

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ADDENDUM TO:
CHICAGO RIVER BASCULE BRIDGE, WABASH AVENUE
Illinois & Michigan Canal National Heritage Corridor
Chicago Bridges Recording Project
Spanning Chicago River at N. Wabash Ave.
Chicago
Cook County
Illinois

HAER No. IL-48

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Department of the Interior
1849 C St. NW
Washington, DC 20240

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HISTORIC AMERICAN ENGINEERING RECORD
CHICAGO RIVER BASCULE BRIDGE,
WABASH AVENUE

HAER No. IL-48

This report is an addendum to a 3 page report previously transmitted to the Library of Congress in 1995.

Location:	Spanning the Chicago River at Wabash Avenue, Chicago, Cook County, Illinois UTM: 16/447980/4637300 Quad: Chicago Loop Date of Construction: 1930
Designer:	Donald M. Becker, engineer of bridge design, construction supervised by Loran Gayton, city engineer, Clarence S. Rowe, engineer of bridge construction, and Thomas G. Pilhfeldt, City Engineer, Bridge Division
Builder:	Ketler-Elliott Company.
Fabricator:	American Bridge Company
Present Owner:	City of Chicago.
Present Use:	Vehicular bridge.
Significance:	The last of the beaux-arts inspired designs on the Chicago Rive, the Wabash Avenue Bridge marked the transition in the architectural treatment of the city's movable bridges toward modernism that reached fuller expression in the late 1930's. In layout and style, the bridge resembled several others built in the 1920's, including those at Roosevelt Road, and LaSalle, Clark, Madison, and Adams streets.
Historian:	Matthew T. Sneddon, June 1999.

Project Description:

The Chicago Bridges Recording Project was sponsored during the summer of 1999 by HABS/HAER under the general direction of E Blaine Cliver, Chief; the City of Chicago, Richard M. Daley, Mayor; the Chicago Department of Transportation, Thomas R. Walker, Commissioner, and S. L. Kaderbek, Chief Engineer, Bureau of Bridges and Transit. The field work, measured drawings, historical reports, and photographs were prepared under the direction of Eric N. DeLony, Chief of HAER.

Introduction

In historical accounts of Chicago's movable bridges, the Wabash Avenue Bridge is often distinguished by its American Institute of Steel Construction award as the most beautiful bridge built in North America during 1930.[1] Indeed, the bridge's design was well composed, balancing continuity with an eye toward the future. The upper portion of the octagonal operator's houses, ringed by twenty inset, double-hung windows and topped by a lead mansard roof, blended harmoniously with nearby bridges, while the monumental Indiana limestone-faced lower base hinted at the emerging influence of Art Deco. The last of the beaux-arts inspired designs on the Chicago River, the Wabash Avenue Bridge marked a transition in the architectural treatment of the city's movable bridges toward modernism that reached fuller expression in the late 1930s.[2] Yet as historian Joan Draper rightly noted, homogeneity rather than difference characterized the architecture of Wabash Avenue Bridge.[3] In layout and style, the bridge resembled several others built in the 1920s, including those at Roosevelt Road, LaSalle, Clark, Madison, and Adams streets. In this way, the AISC award had symbolic component. It was recognition of a twenty-year long program to beautify the city's bridges and reshape the riverfront that served as the gateway to the city.

Although a tribute to the improvement of Chicago's city bridges, the award did not speak to the Wabash Bridge's significance from an engineering standpoint. Nearly thirty years of experience with simple trunnion bascules had guided the city's design of the Wabash bridge, which in the words of its principle designer, Donald Becker, represented "a period of refinement" of the "Chicago-type" bridge. Although Becker's design was influenced by principles established in 1902, by the late 1920s, the "Chicago-type" bascule bridge had changed considerably. Engineers of the Bridge Division responded to pressure from groups concerned with improving the appearance of the bridges. Such concerns included patent infringement lawsuits, urban planning directives, the introduction of new materials and innovative designs, and developments in transportation technology.

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[1] The award was in Class A, Bridges costing more than $1, 000, 000 to build.

[2] The Outer Drive Bridge, completed in 1937, typifies the modernist architecture of the late 1930s and early 1940s.

[3] Joan Draper and Naomi Donson, *Chicago Bridges* (Chicago: City of Chicago, Department of Public Works, 1984), 88.

Bridge History

In the 1920's the transportation infrastructure of Chicago's central business district underwent a radical physical transformation. The city straightened the Chicago River to add three north-south Loop thoroughfares, completed major street widening projects at Michigan Avenue, Roosevelt Road, and LaSalle Street, and razed buildings and a marketplace on South Water Street to make way for a bi-level boulevard, the first of its kind in the United States, later known as Wacker Drive. Citizens witnessed the disappearance of the old center-pier swing bridges on the Chicago River near the Loop. By 1930, the city had nearly completed its thirty-year program to replace all of the center-pier swing bridges on the Chicago River with bascule drawbridges.

Such urgent steps to improve traffic flow reflected the city leadership's view of Chicago's growing transportation problem. One of the paramount threats to Chicago's economic growth was the meteoric rise in the number of automobiles since World War I. As cars and trucks began to crowd the streets, they vied for space with horse-drawn wagons transporting market goods and street cars transporting seventy percent of Chicago's commuters in the Loop. Faced with a ten-fold increase in new car registrations since 1914, an investigative committee studying the problem in 1925 estimated congestion would cost the city $120,000,000 per year in lost business.[4] The committee recommended a "wonderful new system of 'boulevards' all over Chicago" to speed traffic in and out of the Loop.[5] In effect, the proposal merely expanded on a system of thoroughfares outlined earlier in Daniel Burnham and Edward Bennett's 1909 *Chicago Plan*, a seminal work in urban planning that had guided the development of public works. Instead of turning to a subway system to relieve congestion, the council accepted the recommendations to add new points of access to the Loop. As the Chicago River roughly bounded the northern and western limits of the central business district, bridges were a crucial component of this plan. In effect, the council decision meant that bridges and more thoroughfares would be the answer to the troubling transportation situation, not a subway. On the main branch of the river, the city built three new connections to downtown, at Michigan Avenue, Franklin and LaSalle streets. By the end of the decade they added one last point of entry into the Loop at Wabash Avenue.

As plans for a new bridge at Wabash Avenue moved forward in 1928, Chicago's riverfront stirred with the activity of continuous demolition and construction. The Wabash Bridge would figure prominently the ongoing projects to improve the flow of traffic in and around the Loop. First and foremost, a new bridge to connect Wabash and Cass Avenues would relieve the heavy congestion on the Michigan Avenue and State Street bridges. Motorists in the area complained that bridge openings created traffic jams that sometimes took hours to untangle,

[4] City of Chicago, *Journal of the Proceedings of the City Council* (9 December 1925): 1783, 1797.

[5] *Journal of the Proceedings.*

and it was hoped an additional bridge would eliminate the build up of cars using the two bridges.

Secondly, traffic could be diverted across the Wabash Avenue Bridge while replacement of the old Scherzer bascule bridge at State Street was carried out. Lastly, the bridge was planned as part of a larger project to build a bi-level roadway on the north bank of the main branch to mirror the one recently completed on the south bank. Although the northern "Wacker Drive" was never built, the viaduct built as the northern approach to the bridge allowed the engineers a degree of flexibility in their bridge design that other locations did not permit. One design consideration urged by local businessmen in the vicinity was the use of a "rail height" truss in the bridge, to harmonize the bridge's appearance with the nearby Michigan Avenue Bridge.[6]
As was the case with many of the bridges near the Loop, businesses that stood to benefit from the new link sought to influence and speed up the construction of the Wabash Bridge. As the *Chicago Tribune* reported, "businessmen of the near north side, particularly on Cass Street and adjoining streets, look upon the proposal as the beginning of a new era of prosperity and business activity in the community, which, they assert, has been dormant for many years."[7] Commercial advocacy took the form of the Wabash Avenue Bridge Association, led by Murray Wolbach, to pressure city council, campaign for bridge bonds, and general promoter of the bridge project. Although the association celebrated the passage of a $3,700,000 bond issue for the bridge on 5 April 1927, the project still faced formidable legal obstacles. The site overlapped a considerable portion of property owned by Chicago & Northwestern Railroad Company. While railroads had in the past successfully opposed the will of city government, in this case, the city successfully negotiated an exchange of property rights and cash settlement with Chicago & Northwestern. The site presented some difficulties from an engineering standpoint as well.

All bridge locations had required some adjustment of the basic design to fit site specific conditions. In the case of the Wabash Avenue Bridge, the concern was how to position the bridge and approaches to connect two streets, Wabash and Cass Avenues that did not connect on a straight line. The length of span required by a skewed bridge was exacerbated by the relentless pressure by navigation interests for wider channels on the Chicago River. Because the permits needed to bridge a navigable waterway were granted by the Army Corps of Engineers, an agency charged with maintaining or improving navigation on the river, the federal permit for the Wabash Avenue Bridge specified a wide clear span between bridge abutments. As a result, the Wabash Avenue was longest yet designed by the city, ultimately built with a span two hundred and thirty two feet in length, a length unsurpassed until the 1970s. To support a span of that length, the city

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[6] *Chicago Tribune* (22 September 1929).

[7] *Chicago Tribune*

engineers designed substantial foundations to carry the loads of the movable leafs. The loads on the trunnions, around which the movable leaves rotated, were the largest of any bridge yet built, more than double of those at Chicago, Belmont, and Webster avenues, and more than any single-deck bascule built until the 1949 State Street Bridge.[8] Accommodating the weight and length of the bridge ensured that the Wabash Bridge would be expensive to build.

Like its architectural treatment, the engineering of the Wabash Avenue Bridge was characterized by balancing continuity with new developments. The basic design was structured on principles first developed at the turn of the century. This simple trunnion-type bascule design consisted of two movable truss configured leaves that rotated on fixed axles, or trunnions. As the front portion of the span was balanced by weights rigidly attached to the rear, relatively little motive power was needed to raise or lower the leaves. This type of movable bridge opened quickly, left a clear channel for navigation, and was well suited to the pliable soil of the Chicago substratum. Such characteristics of the Wabash Bridge became the basis for the widely known "Chicago-type" bascule bridge.

By 1913, a second generation of Chicago-type bridge had emerged. The second generation was identified by changes in the operating machinery, particularly those relating to an internal rack and pinion system developed and patented by Alexander von Babo, Engineer of Bridge Design in 1908. This structural support system used a larger, cheaper form of counterweight in foundation supports, and in truss configurations. Donald Becker, Engineer of Bridge Design drew on elements of the second-generation bridge type in the Wabash design. The operating machinery for each leaf utilized the patented rack and pinion system mounted internally within the rear end of the truss and driven by two separate drive train and direct current motor units. Despite the development of compact planetary speed reducers in early 1920, the drive train consisted of an established system of three sets of steel spur gears. The simplicity and durability of the three-shaft spur gear layout had given little reason to change the design, although a more rigid unit frame to house the gear train was added to handle the greater stresses imposed by the heavy bridge. To allow for failures or scheduled maintenance, either one hundred horsepower motor unit was capable of raising the leaf individually. Operation of the bridge was controlled from two operator's houses, one on each bank of the river. From his vantage point in the upper level of the operator's house, the bridge tender controlled the electric motors, center-lock mechanisms, and brakes that slowed the speed of the movable leaf as it reached the fully open or fully closed position.

The Wabash design relied on technologies proven by years of bridge service, but it also incorporated several recent developments such as improved electronic controls, an innovative

[8] Chicago Department of Public Works, Division of Bridges, "Bridge Specifications" (unpublished table from archives of Chicago Department of Transportation, Bureau of Bridges and Transit, n.d.)

system of structural supports, and pre-cast concrete decking. The arrangement of the trunnion support was particularly noteworthy, as it represented a response to a bitter defeat suffered in a patent infringement case. The lawsuit brought by the Strauss Bascule Bridge Company (later Strauss Engineering Corporation) against the city focused on the "cross-girder" system of supporting the trunnions, a method used by the city in several bridges built between 1913 and 1922. Supporting the trunnion bearings was a special concern. Not only was the entire weight of the leaf concentrated on the two bearings as it opened, but the supports had to allow space for the path of the large counterweight rigidly fixed to the rear end of the truss. Strauss argued that both the transverse girder, that carried the loads of the trunnions to the side walls of the counterweight pit, and the truss configuration, that permitted use of a larger, cheaper counterweight were major features covered by his 1905 patent. When the ruling handed down by the courts went against the city, not only were substantial monetary damages assessed, but to avoid further infringement, the Bridge Division had to complete a different design or pay a licensing fee to the Strauss Company. Although, in one case the city obtained a license for the cross girder design, an alternative to the cross-girder was found in the s-girder. Instead of crossing the counterweight pit transversely like the cross girder, the s-girder was placed longitudinally from the river pier to the anchor pier. The curved shaped of the box girder loosely resembled an "s", wide in the middle under the trunnion and thinner in the sections attached to the front and rear piers. The s-girder carried the load of the inner trunnion bearing, while the outer trunnion bearing rested on Y. City engineers introduced the s-girder in two bridges completed in 1927 at 100th Street and Adams Street. Wabash Avenue Bridge also used the s-girder, which eventually became the most common method of supporting the trunnions in the city-designed bridges.

Another recent development, pre-cast concrete decking, appeared to be a promising answer to the persistent problems of wear and slippery traction that plagued the bridge maintenance section. Automobile and truck traffic was wearing out roadway decking with alarming regularity, and traction on the existing asphalted-timber decking tended to be treacherous in wet or icy conditions. In 1929, the city engineers experimented with a pre-cast concrete system at 106th Street Bridge, the success of which convinced them to substitute the new concrete slabs for the timber decking in two bridges under construction at Clark Street and Wabash Avenue.

The twelve feet long by eight feet wide concrete slabs consisted of high-early strength cement and sand combined with lightweight coarse aggregate of heat treated clay and shale in the bottom layer and a granite aggregate in the upper wearing surface. The specially cast, two-layer concrete mixture produced a strong, light and thin floor. Steel welding lugs extended from the bottom of the slab, which were electrically welded to the steel stringers of the truss

superstructure. The pre-cast slabs were made by the Benedict Stone Company, and floated to the site by barge.[9]

Early indications pointed to the success of the slabs as a new decking surface. After several months in operation, the *Des Plaines Suburban Times* noted "something different about the Wabash Avenue bridge," in that "the motorists [sic] who drives onto the Wabash avenue bridge finds that he is on a safe surface when he throws on his brakes he does not skid."[10] However, there is little evidence to show that the pre-cast concrete system was used again. During the 1930's, most bridge decks were repaired or overhauled with asphalted timber, and in the 1940's steel mesh decks, either open or filled with concrete, became the favored method of bridge surfacing.

As the Bridge Division engineers liked to point out, they tried to stay abreast of the latest developments in bridge technology, but radical changes did not accompany the introduction of new materials.[11] Typically, most new design or material technologies implemented by the city related to improving the existing design rather than the development of a new type of bridge. In part, their hands were tied by civic groups such as the Chicago Plan Commission (CPC), the Illinois Chapter of the American Institute of Architects (AIA), and the Municipal Art League that would tolerate no other type of bridge on the sections of the river near the Loop. In the cases where the Bridge Division considered alternative types of movable bridges such as a vertical lift bridge for 12th Street (later Roosevelt Road) and Lake Street, or a single leaf bascule for Monroe Street, protests from the CPC and AIA effectively ended any such plans.

The influence of such groups on the direction of bridge building testifies to the strength of the "city beautiful" movement in Chicago, and a change in attitudes towards the appearance of the city's bridges. Early in the twentieth century architectural and art organizations had been quick to recognize the civic value of the bridges, and urged consideration of the architectural effect of these visible public works. City engineers ignored the first calls by the Municipal Art League for a more artistic rendering of the city's bridges, but with the publication of Daniel Burnham and Edward Bennett's *Chicago Plan*, the movement gained new direction. Architects Burnham and assistant Bennett's plan was sponsored by the Commercial Club of Chicago to guide the future development of the city. Charles H. Wacker, Chairman of the Chicago Plan Commission, explained that the central idea of the plan was based on the belief that if Chicago was to become "the greatest and most attractive city of this continent, its development and

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[9] "Bridge Floor Built of Precast Concrete Slabs Secured by Welding," *Engineering News-Record* 106, no.22 (28 May 1931): 894.

[10] *Des Plaines Suburban Times* (13 February 1931).

[11] Chicago Department of Public Works, *Annual Report of the Chicago Department of Public Works* (1929), 212.

improvement should be guided by certain and pre-arranged lines, to the end that necessary expenditures each year may serve the needs of the future."[12] Charged by the city with carrying out the *Chicago Plan*, the Chicago Plan Commission (CPC) drew its membership from prominent citizens, and exercised considerable influence over the future architectural treatment of the bridges and surrounding approaches.

By 1913, as the second generation of the Chicago type took form, the movement behind improving the appearance of the heretofore starkly utilitarian bridges gained considerable strength. Aside from the CPC, other groups such as the AIA and Municipal Art League joined in the effort to guide architectural policy on the bridges. Perhaps the greatest individual role in shaping the future architecture of the Chicago bridges was played by Bennett. As co-author of the *Chicago Plan*, Bennett was well suited to his appointment as architectural consultant to the CPC. He eventually had a part in the architectural plans for some twenty city bridges built between 1913 and 1930.[13] The Wabash design was to be Bennett's last.

The Bridge Division's initial collaboration with Bennett and other architects from the private sector began in 1912 during the design of the Washington Street Bridge. Since the Washington project, the architecture of the bridges had passed through three phases by 1930. The first few bridges of improved appearance represented a trial period during which architects experimented with materials and styles. Transition to the second phase began with the Lake Street Bridge in 1916, a design that somewhat crudely established a pattern used for the operator's houses of several bridges built between 1916 and 1922. These operator's houses had octagonal floor plans, masonry (either concrete that simulated rock facing or the genuine article) bases, and tiled roofs commonly crowned with a shell motif emblematic of the Chicago's seal. The third phase was typified by the operator's houses with limestone bases, beaux arts style and lead mansard roofs at Adams, LaSalle, Clark, and Wabash. These bridges constituted perhaps the fullest expression of Bennett's architectural program.

Despite the obvious influence of Bennett on the architecture of the Wabash Bridge, others may have had a hand in the award winning design. The extant architectural drawings of the bridge bear several signatures, including Bennett, architectural consultant of the CPC; Howard J. White, President of the Illinois Society of Architects; J.G. Bolleubacher, President, Chicago Chapter of the AIA; Hugh E. Young, Engineer, CPC; and Everett Willard, Art Commission of Chicago. The other signatures may have simply represented approval of what Bennett proposed, but some insight may be gained from Historian Joan Draper's summary of Bennett's bridge

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[12] Francis A. Eastman, *Chicago City Manual* (Chicago: Bureau of Statistics and Municipal Library, 1911), 141.

[13] Joan Draper, *Edward H. Bennett: Architect and City Planner, 1874-1954* (Chicago: The Art Institute, 1982), 59-60.

projects: "Although it is possible to say that Edward Bennett designed the architectural features of Chicago's most beautiful public works, he always collaborated with others and rarely supervised construction of his Chicago Plan work."[14] Ironically, just five months before the Wabash bridge opened, his position with the CPC was abolished, leaving the way open for Hugh Young, a former bridge Bridge Division engineer, now a consulting engineer with the CPC, to guide the future construction of Chicago's public works.[15]

While the Wabash Avenue Bridge warranted consideration for the AISC award, as previously mentioned, the architectural treatment of the operator's houses and approaches did not signal a great departure from other bridges in the Loop. What did distinguish the bridge visually, was the use of rail height trusses in the bridge's superstructure. In the 1910s a concern for the aesthetics of the bridge's superstructure began to have an increasing affect on the design process. Where the grades of the approaching streets permitted, engineers tried to place the trusses that supported each leaf beneath the roadway. The Bridge Division's 1930 "Design Specifications for the Substructures, Superstructures and Appurtenances of Movable Bridges" advised that the engineer's first concern was to provide the required clearance between the river and the bottom of the truss, but second, where conditions were suitable, consideration should be given to a deck type structure. On any bridge, the specifications recommended, "in determining the truss outline special care should be taken to obtain as pleasing an outline as is consistent with the requirements for channel clearance, suitable grades, and general economy of design."[16]

Prior to the completion of the Wabash Avenue Bridge, most Chicago type bridges over the main branch of the Chicago River had pony type trusses, with half of the truss structure protruding above the deck, and half below. The exception was a special case, the double-decked Michigan Avenue Bridge, which naturally placed the upper roadway level with the top chord of the supporting truss. Because the city had plans in 1927 to build a second bi-level boulevard on the north bank of the river to mirror the recently constructed Wacker Drive on the south bank, engineers raised the northern approach to the bridge high enough to permit a bridge with rail height trusses, where the top chord of the truss effectively acted as a low divider or rail between street traffic and the pedestrian sidewalk. Rail height trusses had been used previously in only one other bridge at Madison Street, completed in 1922. Although a bi-level boulevard on the northern riverfront never materialized, the viaduct built as the northern approach to the bridge in anticipation of the raised roadway provided the elevation needed for the rail height trusses.

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[14] Draper, *Edward H. Bennett*. 22.

[15] Draper, *Edward H. Bennett.*

[16] City of Chicago, Department of Public Works, Bureau of Engineering, Division of Bridges, "Design Specifications for the Substructures, Superstructures and Appurtenances of Movable Bridges" (1930), archives of the Chicago Department of Transportation, Bureau of Bridges and Transit.

Above the deck, the trusses integrated well with the roadway. Below the deck, the trusses arched gracefully toward the center point. Instead of the awkward lateral braces that carried the electrical lines of the streetcars on most pony-trussed bridges, this duty was handled by sculpted T-form carriers on the Wabash bridge that have since been removed. If architecturally the Wabash Avenue Bridge was similar to other bridges on the Chicago River, its superstructure was distinctive, no doubt contributing to its AISC commendation as "not only useful to the fullest extent but also pleasing and harmonious."[17]

Epilogue

Like many movable bridges on the Chicago River, the Wabash Avenue Bridge was at least on one occasion damaged by a collision with a ship. In 1932, the S.S. "Alfred E. Smith" struck the bridge, breaking two pre-cast concrete sidewalk slabs and bending stringers and railing posts. Less unexpected repairs have also been made to the bridge as part of regular maintenance, including a new deck and a major rehabilitation project completed in 1967.

The cost of maintaining and operating Chicago's older movable bridges has been a constant concern for the city. At Wabash Avenue alone in 1946, the city paid annual salaries over $22,000 to bridge tenders, despite the decline in the number of openings per year over the previous decade.[18] In 1950, the city sought to cut operational costs associated with the movable bridges through a conversion to a one-man operation. Nearly all the double-leaf bascule bridges built by the city to this point had two operator's houses, each house controlling the operation of one leaf. This arrangement was driven by technological factors as well as an aesthetic concern for symmetry. One of the first steps taken in the conversion process was to discontinue the practice of assigning bridge tenders to specific bridges, instead, a roving band of tenders "leap-frogged" from bridge to bridge, raising and lowering the bridges as needed. The operational changes were welcomed by motorists, who had long protested the delays and traffic jams caused by frequent bridge openings. The city completed the conversion of the Wabash Avenue Bridge to one-man operation in 1961, at the same time modernizing the electrical equipment. Now superfluous, the northern operator's house stands as an inoperative symbol of an earlier level of technology and architectural vision.

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[17] *Chicago Tribune* (22 October 1931).

[18] Like the other bridges on the main branch, the number of openings had dropped 40% from 1936 to 1947. Chicago Department of Public Works, *Annual Report of the Chicago Department of Public Works* (1937), 316; (1946), 280-281.

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